

What is claimed is:

1. A water treatment apparatus comprising:

an ultraviolet radiation part that is formed into an elongated tubular configuration, and receives therein an axially extending ultraviolet radiation unit with a space formed between an inner peripheral surface thereof and said ultraviolet radiation unit to pass therethrough wastewater; and

an oxidizer mixing part that is disposed adjacent to and upstream of said ultraviolet radiation part;

wherein said oxidizer mixing part includes:

a minimum sectional area part that is formed with an oxidizer suction port for sucking an oxidizer supplied from an oxidizer supply part into wastewater, and is squeezed to a prescribed sectional area; and a conical cone part of a tapered configuration that expands from said minimum sectional area part to a large passage part of the same thickness as that of said ultraviolet radiation part.

2. The water treatment apparatus according to claim 1, wherein a distance from said minimum sectional area part to said ultraviolet radiation part is 50 cm or less.

3. The water treatment apparatus according to claim 1, wherein a distance from said minimum sectional area part to a range in which the strength of ultraviolet light irradiated by said ultraviolet radiation unit becomes 100 w/m^2 or more is 50 cm or less.

4. The water treatment apparatus according to claim 1, further comprising a flow passage for drawing the treated water that has passed said ultraviolet radiation part and returning it to a location upstream of said minimum sectional area part.

5. The water treatment apparatus according to claim 1, wherein said ultraviolet radiation part has a diameter determined in such a manner that

the strength of ultraviolet light at said inner peripheral surface becomes 30 w/m² or more.

6. The water treatment apparatus according to claim 1, wherein said ultraviolet radiation part has a diameter determined in such a manner that the strength of ultraviolet light at said inner peripheral surface becomes 10 % or more of the ultraviolet light strength at an ultraviolet radiation surface of said ultraviolet radiation unit.

7. The water treatment apparatus according to claim 1, wherein said ultraviolet radiation part has a radius of between 2 cm and 4 cm, inclusive.

8. The water treatment apparatus according to claim 1, wherein a distance between said inner peripheral surface and an ultraviolet radiation surface of said ultraviolet radiation unit is between 5 mm and 25 mm, inclusive.

9. The water treatment apparatus according to claim 1, wherein a wastewater passage in said ultraviolet radiation part has a hydraulic diameter of between 10 mm and 50 mm, inclusive.

10. The water treatment apparatus according to claim 1, wherein said oxidizer comprises either one of an ozone gas, an ozone containing gas, and an ozone water with ozone dissolved in a liquid.

11. The water treatment apparatus according to claim 10, wherein the product of a distance D from said inner peripheral surface to an ultraviolet radiation surface of said ultraviolet radiation unit and $[1000e^{(2.3(290h[O_3G] + 320[O_3L] + 1.86[H_2O_2]))/100}/\{2.3(290h[O_3G] + 320[O_3L] + 1.86[H_2O_2])\}^{1.5}$ (where h: a gas holdup, $[O_3G]$: a gaseous phase ozone concentration, $[O_3L]$: a liquid phase ozone concentration, and $[H_2O_2]$: a hydrogen peroxide concentration) is between 0.01 and 0.1, inclusive.

12. The water treatment apparatus according to claim 10, wherein the concentration of said ozone gas is 100 g/m³(N) or more.